

## WHAT IS CLAIMED IS:

1. An arsenic removal media comprising a mixture of:
  - (a) activated bauxite;
  - (b) aluminum trihydrate; and
  - 5 (c) a ferric compound selected from the group consisting of ferric hydroxide, ferric oxyhydroxide, ferric hydroxyoxide and mixtures thereof.
2. The media of claim 1 wherein the activated bauxite is present in the mixture in an amount of about 25 to about 75 wt.%, based on the weight of the mixture on a moisture-free basis.
3. The media of claim 1 wherein the aluminum trihydrate is present in the mixture in an amount of about 25 to about 80 wt.%, based on the weight of the mixture on a moisture-free basis.
4. The media of claim 1 wherein the ferric compound is present in the mixture in an amount of about 2 to about 25 wt.%, based on the weight of the mixture on a moisture-free basis.
5. The media of claim 1 further comprising a natural or synthetic filler which has the capability of modifying the porosity of the mixture.
6. The media of claim 5 wherein the filler comprises a flour derived from nut shells, fruit pits, corn cobs, rice hulls, wood, polyolefins, cellulose and/or starch.
7. The media of claim 5 wherein the filler is present in the mixture in an amount of about 2 to about 20 wt.%, based on the weight of the mixture on a moisture-free basis.

8. The media of claim 1 wherein the mixture is subjected to calcination at a temperature of about 300 to about 750°C for a period of about 0.5 to about 2 hours.

9. The media of claim 8 wherein the mixture is present in the form of a powder having an average particle size of about 10 to about 75 microns.

10. The media of claim 8 wherein the mixture is present in the form of granules having an average particle size of about 4 to about 400 mesh.

11. The media of claim 8 wherein the mixture is present in the form of extruded particles having an average diameter of about 1/32 to about 1/8 inch.

12. A method for preparing an arsenic removal media which comprises the steps of.

- 5
- (a) mixing powders comprising a combination of (i) activated bauxite, (ii) aluminum trihydrate and (iii) a ferric compound selected from the group consisting of ferric hydroxide, ferric oxyhydroxide, ferric hydroxyoxide and mixtures thereof with a sufficient amount of water to provide a formed absorbent material;
  - (b) drying the absorbent material resulting from step (a); and
  - (c) calcining the dried absorbent material resulting from step (b).

13. The method of claim 12 wherein the activated bauxite is present in the combination in an amount of about 25 to about 75 wt.%, based on the weight of the combination on a moisture-free basis.

14. The method of claim 12 wherein the aluminum trihydrate is present in the combination in an amount of about 25 to about 80 wt.%, based on the weight of the combination on a moisture-free basis.

15. The method of claim 12 wherein the ferric compound is present in the combination in an amount of about 2 to about 25 wt.%, based on the weight of the combination on a moisture-free basis.

16. The method of claim 12 further comprising incorporating into the combination a natural or synthetic filler which has the capability of modifying the porosity of the mixture.

17. The method of claim 16 wherein the filler comprises a flour derived from nut shells, fruit pits, corn cobs, rice hulls, wood, polyolefins, cellulose and/or starch.

18. The method of claim 16 wherein the filler is present in the combination in an amount of about 2 to about 20 wt.%, based on the weight of the combination on a moisture-free basis.

19. The method of claim 12 wherein the drying of step (b) takes place at a temperature of about 50 to about 150 °C.

20. The method of claim 12 wherein the calcination takes place at a temperature of about 300 to about 750°C for a period of about 0.5 to about 2 hours.

21. The method of claim 20 wherein the absorbent material is formed into a powder having an average particle size of about 10 to about 75 microns.

22. The method of claim 20 wherein the absorbent material is formed into granules having an average particle size of about 4 to about 400 mesh.

23. The method of claim 20 wherein the absorbent material is extruded so as to provide extruded particles having an average diameter of about 1/32 to about 1/8 inch.

24. A method for removing arsenic from an aqueous system which comprises contacting the aqueous system an arsenic removal media until the arsenic is substantially removed from the aqueous system, said media comprising a mixture of:

- 5           (a)     activated bauxite;
- (b)     aluminum trihydrate; and
- (c)     a ferric compound selected from the group consisting of ferric hydroxide, ferric oxyhydroxide, ferric hydroxyoxide and mixtures thereof

25. The method of claim 24 further comprising subjecting the aqueous system to oxidation to the extent necessary to oxidize any arsenic present in the +3 valence state to arsenic in the +5 valence state prior to contacting the aqueous system with the arsenic removal media.

26. The method of claim 25 wherein the oxidation is carried out by contacting the aqueous system with an oxidizing agent selected from the group consisting of ambient air, hydrogen peroxide, oxygen, ozone, chlorine, a chloroxide, manganese dioxide, an alkali metal permanganate, a chromate, a dichromate and mixtures thereof.

27. The method of claim 24 wherein the activated bauxite is present in the mixture in an amount of about 25 to about 75 wt.%, based on the weight of the mixture on a moisture-free basis.

28. The method of claim 24 wherein the aluminum trihydrate is present in the mixture in an amount of about 25 to about 80 wt.%, based on the weight of the mixture on a moisture-free basis.

29. The method of claim 24 wherein the ferric compound is present in the mixture in an amount of about 2 to about 25 wt.%, based on the weight of the mixture on a moisture-free basis.

30. The method of claim 24 wherein the mixture further comprises a natural or synthetic filler which has the capability of modifying the porosity of the mixture.

31. The method of claim 30 wherein the filler comprises a flour derived from nut shells, fruit pits, corn cobs, rice hulls, wood, polyolefins, cellulose and/or starch.

32. The method of claim 30 wherein the filler is present in the mixture in an amount of about 2 to about 20 wt. %, based on the weight of the mixture on a moisture-free basis.

33. The method of claim 24 wherein the mixture is subjected to calcination at a temperature of about 300 to about 750°C for a period of about 0.5 to about 2 hours.

34. The method of claim 24 wherein the mixture is present in the form of a powder having an average particle size of about 10 to about 75 microns.

35. The method of claim 24 wherein the mixture is present in the form of granules having an average particle size of about 4 to about 400 mesh.

36. The method of claim 24 wherein the mixture is present in the form of extruded particles having an average diameter of about 1/32 to about 1/8 inch.